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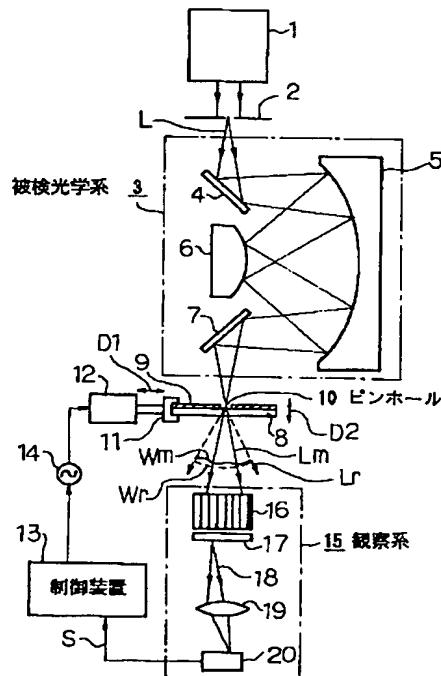
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(54)【発明の名称】 光学装置の検査方法及び装置

(57)【要約】

【課題】 被検物としての光学装置を通過した光束と、この光束の一部から生成される参照光との干渉光を検出する検査装置において、その干渉光の位相を高精度に検出する。

【解決手段】 被検光学系3を通過した光束Lがプレート8に形成されたピンホール10上に点像を形成する。その点像からの計測光Lmと、その点像からの光束の内でピンホール10で回折された参照光Lrとの干渉光を観察系15で受光し、その干渉光によって形成される干渉縞を撮像素子20で撮像する。プレート8を光束Lを横切る方向、又は光束Lの光路に沿った方向に振動させることによってヘテロダイン干渉光を生成し、その干渉縞の各部の位相を高精度に検出する。





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METHOD AND DEVICE FOR INSPECTING OPTICAL DEVICE

Patent Number: JP11142291

Publication date: 1999-05-28

Inventor(s): UMAGOME NOBUTAKA

Applicant(s): NIKON CORP

Requested Patent: JP11142291

Application Number: JP19980239290 19980825

Priority Number(s):

IPC Classification: G01M11/00; G01B9/02; G01J9/00; G01N21/27

EC Classification:

Equivalents:

Abstract

PROBLEM TO BE SOLVED: To detect the phase of interference light in an inspecting device which inspects interference light between a beam passed through an optical system to be inspected and reference light created from a section of the beam.

SOLUTION: A beam L transmitted through an optical system 3 to be inspected forms a point image on a pin hole 10 formed in a plate 8. Interference light between measuring light Lm from the point image and reference light Lr diffracted at the pin hole 10 among beams from the point image is received by an observing system 15, and an image of interference fringes created by the interference light is picked up by a pickup element 20. By vibrating the plate 8 in directions across the beam L or along the light passage of the beam L, heterodyne interference light is created, and the phase of each section of the interference fringes is detected with high accuracy.

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L1 ANSWER 1 OF 1 WPINDEX (C) 2003 THOMSON DERWENT
ACCESSION NUMBER: 1999-375164 [32] WPINDEX
DOC. NO. NON-CPI: N1999-280210
TITLE: Optical system inspection - involves making main beam, which passed through tested optical system, pass through pinhole of moving diffraction plate in order to generate diffracted reference beam corresponding to portion of main beam.
DERWENT CLASS: S02 S03
INVENTOR(S): MAGOME, N
PATENT ASSIGNEE(S): (NIKR) NIKON CORP
COUNTRY COUNT: 2
PATENT INFORMATION:

| PATENT NO | KIND | DATE | WEEK | LA | PG | MAIN | IPC |
|---------------|------|----------|-----------|----|----|------------|-----|
| JP 11142291 | A | 19990528 | (199932)* | | 11 | G01M011-00 | <-- |
| US 2001026367 | A1 | 20011004 | (200161) | | | G01B009-02 | |

APPLICATION DETAILS:

| PATENT NO | KIND | APPLICATION | DATE |
|---------------|------------|----------------|----------|
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FILING DETAILS:

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| US 2001026367 | A1 Cont of | US 6002115 |

PRIORITY APPLN. INFO: JP 1997-229142 19970826
INT. PATENT CLASSIF.:

MAIN: G01B009-02; G01M011-00

SECONDARY: G01J009-00; G01N021-27

BASIC ABSTRACT:

JP 11142291 A UPAB: 19990813
NOVELTY - A main beam (L) is made to pass through a tested optical system (3). The main beam, which passed through the tested optical system, is made to pass through the pinhole (10) of a moving diffraction plate (8) in order to generate a diffracted reference beam (Lr) corresponding to a portion of the main beam. DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for an optical system inspection apparatus.

USE - For testing optical characteristic e.g. wavefront aberration of optical apparatus. For testing the projection optical system of exposure system used in lithography process of semiconductor device manufacture.

ADVANTAGE - Ensures highly precise detection of the phase of interference light, thus highly accurate evaluation of aberration can be performed corresponding to actual conditions used. Ensures highly precise evaluation of optical characteristic of projection optical system.

DESCRIPTION OF DRAWING(S) - The figure shows the schematic block diagram of an optical system inspection apparatus. (3) Tested optical system; (8) Diffraction plate; (10) Pinhole; (L) Main beam; (Lr) Diffracted reference beam.

Dwg.1/6

FILE SEGMENT:

EPI

FIELD AVAILABILITY:

AB; GI

MANUAL CODES:

EPI: S02-A03A; S02-J04; S03-A09; S03-E04A1